

CLAIMS:

1. A device comprising:

a back plane having an optical fiber, the optical fiber of the back plane having a terminal end, the terminal end of the optical fiber of the back plane having a terminal surface oriented at an angle relative to a longitudinal length direction of the optical fiber of the back plane; and

a shroud having an optical fiber, the optical fiber of the shroud having a terminal end, and wherein the terminal end of the optical fiber of the shroud is in optical communication with the terminal end of the optical fiber of the back plane, and wherein,

when a first light signal is transmitted from the optical fiber of the shroud to the optical fiber of the back plane, the first light signal exits the terminal end of the optical fiber of the shroud and impinges a surface of the optical fiber of the back plane adjacent to the terminal end of the optical fiber of the back plane, the first light signal then enters the optical fiber of the back plane and, due to total internal reflection, is reflected off of the terminal surface of the optical fiber of the back plane so that the first light signal travels along the longitudinal length direction of the optical fiber of the back plane away from the terminal end of the optical fiber of the back plane, and wherein,

when a second light signal is transmitted from the optical fiber of the back plane to the optical fiber of the shroud, the second light signal travels through the optical fiber of the back plane toward the terminal end of the optical fiber of the back plane, the second light signal is then, due to total internal reflection, reflected off of the terminal surface of the optical fiber of the back plane and then exits the surface of the optical fiber of the back plane adjacent to the terminal end of the optical fiber of the back plane, the second light signal then enters the optical fiber of the shroud through the terminal end of the optical fiber of the shroud.

2. A device according to Claim 1 wherein the angle is substantially forty-five degrees.
3. A device according to Claim 2 wherein a longitudinal length direction of the optical fiber of the shroud is substantially perpendicular to the longitudinal length direction of the optical fiber of the back plane.
4. A device according to Claim 3 wherein the shroud contacts the back plane.
5. A device according to Claim 4, further comprising a lens positioned between the terminal end of the optical fiber of the shroud and the terminal end of the optical fiber of the back plane.
6. A device according to Claim 5 wherein the back plane includes a first alignment pin aperture and a second alignment pin aperture.
7. A device according to Claim 6 wherein the shroud includes a first alignment pin and a second alignment pin, and wherein the first alignment pin aperture of the back plane has a shape complementary to a shape of the first alignment pin of the shroud, and wherein the second alignment pin aperture of the back plane has a shape complementary to a shape of the second alignment pin of the shroud.
8. A device according to Claim 7 wherein the terminal surface of the optical fiber of the back plane is metallized.
9. A device comprising:
 - a back plane having an optical fiber, the optical fiber of the back plane having a terminal end, the terminal end of the optical fiber of the back plane having a terminal surface oriented at an angle relative to a longitudinal length direction of the optical fiber of the back plane; and
 - a shroud having an optical fiber and a lens, the optical fiber of the shroud having a terminal end, and wherein the terminal end of the optical fiber of the shroud is in optical

communication with the lens, and wherein the lens is in optical communication with the terminal end of the optical fiber of the back plane, and wherein,

when a first light signal is transmitted from the optical fiber of the shroud to the optical fiber of the back plane, the first light signal exits the terminal end of the optical fiber of the shroud and enters and exits the lens, the first light signal then impinges a surface of the optical fiber of the back plane adjacent to the terminal end of the optical fiber of the back plane, the first light signal then enters the optical fiber of the back plane and, due to total internal reflection, is reflected off of the terminal surface of the optical fiber of the back plane so that the first light signal travels along the longitudinal length direction of the optical fiber of the back plane away from the terminal end of the optical fiber of the back plane, and wherein,

when a second light signal is transmitted from the optical fiber of the back plane to the optical fiber of the shroud, the second light signal travels through the optical fiber of the back plane toward the terminal end of the optical fiber of the back plane, the second light signal is then, due to total internal reflection, reflected off of the terminal surface of the optical fiber of the back plane and then exits the surface of the optical fiber of the back plane adjacent to the terminal end of the optical fiber of the back plane, the second light signal then enters and exits the lens, the second light signal then enters the optical fiber of the shroud through the terminal end of the optical fiber of the shroud.

10. A device according to Claim 9 wherein the angle is substantially forty-five degrees.

11. A device according to Claim 10 wherein a longitudinal length direction of the optical fiber of the shroud is substantially perpendicular to the longitudinal length direction of the optical fiber of the back plane.

12. A device according to Claim 11 wherein the shroud contacts the back plane.

13. A device according to Claim 12 wherein the back plane includes a first alignment pin aperture and a second alignment pin aperture.

14. A device according to Claim 13 wherein the shroud includes a first alignment pin and a second alignment pin, and wherein the first alignment pin aperture of the back plane has a shape complementary to a shape of the first alignment pin of the shroud, and wherein the second alignment pin aperture of the back plane has a shape complementary to a shape of the second alignment pin of the shroud.

15. A device according to Claim 14 wherein the terminal surface of the optical fiber of the back plane is metallized.

16. A device comprising:

a back plane having an optical fiber, the optical fiber of the back plane having a terminal end, the terminal end of the optical fiber of the back plane having a terminal surface oriented at an angle relative to a longitudinal length direction of the optical fiber of the back plane, and wherein the angle is substantially forty-five degrees, and wherein the terminal surface of the optical fiber of the back plane is metallized;

a daughter card; and

a shroud mounted to the daughter card, the shroud having an optical fiber and a lens, the optical fiber of the shroud having a terminal end, and wherein a longitudinal length direction of the optical fiber of the shroud is substantially perpendicular to the longitudinal length direction of the optical fiber of the back plane, and wherein the terminal end of the optical fiber of the shroud is in optical communication with the lens, and wherein the lens is in optical communication with the terminal end of the optical fiber of the back plane, and wherein,

when a first light signal is transmitted from the optical fiber of the shroud to the optical fiber of the back plane, the first light signal exits the terminal end of the optical fiber of the shroud and enters and exits the lens, the first light signal then impinges a surface of the optical fiber of the back plane adjacent to the terminal end of the optical fiber of the back plane, the first light signal then enters the optical fiber of the back plane and, due to total internal reflection, is reflected off of the terminal surface of the optical fiber of the back plane so that the first light signal travels along the longitudinal length direction of the optical fiber of the back plane away from the terminal end of the optical fiber of the back plane, and wherein,

when a second light signal is transmitted from the optical fiber of the back plane to the optical fiber of the shroud, the second light signal travels through the optical fiber of the back plane toward the terminal end of the optical fiber of the back plane, the second light signal is then, due to total internal reflection, reflected off of the terminal surface of the optical fiber of the back plane and then exits the surface of the optical fiber of the back plane adjacent to the terminal end of the optical fiber of the back plane, the second light signal then enters and exits the lens, the second light signal then enters the optical fiber of the shroud through the terminal end of the optical fiber of the shroud.

17. A device according to Claim 16 wherein the shroud contacts the back plane.
18. A device according to Claim 17 wherein the back plane includes a first alignment pin aperture and a second alignment pin aperture.
19. A device according to Claim 18 wherein the shroud includes a first alignment pin and a second alignment pin, and wherein the first alignment pin aperture of the back plane has a shape complementary to a shape of the first alignment pin of the shroud, and wherein the second

alignment pin aperture of the back plane has a shape complementary to a shape of the second alignment pin of the shroud.

20. A device according to Claim 19, further comprising an adhesive material which secures the lens to the shroud, and wherein the adhesive material has an index of refraction which is substantially the same as an index of refraction of a material of the lens.